Request for Sites to Host Innovative Technology Demonstrations/Evaluations for Cleanup of Dense Non Aqueous Phase Liquid

Issue Date:

October 29, 2001

Due Date/Time:

January 11, 2002, 5:00 P.M. EST

Attached is the Host Site Application (HSA) for demonstrating treatment technology for DNAPL source zones in contaminated aquifers at Federal sites. To be considered for this demonstration program, respondents must submit an original application and ten (10) copies by the due date to:

Ms. Ruth L. Goller
U.S. Environmental Protection Agency
National Risk Management Research Laboratory
26 W. Martin Luther King Drive
Cincinnati, OH 45268

Questions regarding this HSA should be directed to:

Annette Gatchett	**513-569-7697** gatchett.annette@epa.gov
Tom Holdsworth	**513-569-7675** holdsworth.thomas@epa.gov
Jackie Quinn	**321-867-8410** jaqueline.quinn-1@ksc.nasa.gov
Skip Chamberlain	**301-903-7248** grover.chamberlain@em.doe.gov

NOTE: *EPA will not accept applications containing confidential business information (CBI). Applications received containing CBI will be returned to the applicant without review.*

Table of Contents Page

Host SITE Solicitation

Host Site Solicitation

Introduction

U.S. Environmental Protection Agency, National Risk Management Research Laboratory (EPA-NRMRL) and Technology Innovation Office (EPA-TIO);U.S. Department of Energy, Office of Science and Technology (DOE-OST); National Aeronautics and Space Administration, Kennedy Space Center (NASA-KSC); U.S. Navy (NAVFAC), and the U.S. Air Force Research Lab (AFRL) combined resources by forming the Interagency Dense Non Aqueous Phase Liquids (DNAPL) Consortium (IDC) in 1999. With the majority of the IDC's work nearing completion, the agencies have decided to develop a continuing and broader cooperative program of technology testing that builds upon lessons learned from work completed during the DNAPL remediation technologies side-by-side demonstrations at Cape Canaveral, FL. This new effort is called the Federal DNAPL Technology Initiative Program (FeDTIP) and will commence activities in FY2002. The FeDTIP is engaged in an effort to demonstrate and verify the cost and performance of new and relatively mature environmental cleanup technologies for DNAPL source zone cleanup, particularly chlorinated solvents. This solicitation focuses on parties responsible for cleanup of DNAPL-contaminated aquifers and their technology needs at federal sites. Specifically, its purpose is to solicit federal facilities sites to host demonstrations of innovative technologies to treat DNAPL-contaminated aquifers. The FeDTIP is seeking to team with site owners in a cost sharing effort to demonstrate a systems-approach for the cleanup of a DNAPL contaminated aquifers using life-cycle evaluation. It is not the intent of the FeDTIP to address dissolved phase contaminants at these sites. The results of the activities will provide reliable engineering, performance, and cost information to be used by remediation project managers, other site owners and technology vendors. These technology evaluations will also assure that regulatory guidelines and acceptance of the technologies will be easily transferred among interested parties.

Solicitation Objectives

The purpose of this Host Site Application (HSA) is to solicit sites at federal facilities that are available to host full-scale demonstrations of innovative and alternative technologies for the destruction or removal of DNAPL source zone in contaminated aquifers. Through this program, sites can assess one or more innovative technologies under controlled conditions for planning and evaluating remedial or treatment options.

This solicitation should be of interest to state and federal agencies that have regulatory or financial responsibility for on-site remediation of DNAPL-contaminated aquifers.

Solicitation Structure

This HSA consists of two (2) sections:

Section 1: Abstract of program requirements and areas of interest for this solicitation.

Section 2: Application requirements and a description of the criteria used to evaluate applications.

SECTION 1. PROGRAM REQUIREMENTS AND AREAS OF INTEREST

The host site ideally will be able to provide cost share funding for the cost of preparing the site for the technology demonstrations. Site preparation activities include providing power, site access, and physical support for the process (paving, concrete pad, containment, etc.), and assume responsibility for disposal of waste generated during the demonstration. The host site would also potentially have "ear-marked" remediation cleanup funding for their proposed site that the FeDTIP could augment in an effort to address specific science questions. Technology vendors may need assistance to cover expenses incurred during the demonstration and this cost may be partially sponsored by the FeDTIP.

FeDTIP provides support for specific tasks in the demonstration including test plan preparation, rigorous sampling and analysis, and report writing.

Funds are not exchanged between FeDTIP and site representatives. Prior to the demonstration, a no-funds agreement is signed by the site representative(s) and FeDTIP to define the areas of responsibility.

The application developed in response to this HSA will be the basis for the agreement with FeDTIP and must, therefore, contain sufficient details about the proposed site and the actual contaminants involved.

Sites of Primary Interest

The FeDTIP has an interest in receiving responses from any federal facility site that has a specific DNAPL problem that requires cleanup. The primary interest is chlorinated solvents as dense non-aqueous phase liquid under pooled and or residual saturation conditions. DNAPLs pose serious, long-term groundwater contamination problems due to their toxicity; limited solubility in groundwater and significant migration potential in the subsurface as separate phase liquids. These compounds present potential risks to human health and the environment. Sites contaminated with DNAPLs generally consist of source areas and groundwater contamination plumes that migrate down-gradient.

However the source zone may not mimic the movement of the dissolved phase plume. Contaminant nature and distribution often are fundamentally different in source areas, where contaminant mass and concentrations are high and contaminants may be present as both non-aqueous phase liquids and dissolved components. Based on the fundamental differences between dissolved and non-aqueous phase contaminants, different technologies are often required for remediation of source areas and the down-gradient plume. The objective of the FeDTIP is to focus strictly on the source zone.

The host site must meet the following criteria as a minimum to qualify for evaluation of DNAPL cleanup and treatment technologies:

Good site security.

Convenient accessibility by field personnel, equipment, and instrumentation.
Availability for a minimum of six months to two years after selection of the demonstration technologies.

Support of all stakeholders, i.e., regulatory bodies, site owner, and community.
Access to down-gradient areas for sampling and construction (for source treatment only).

No unresolved legal problems regarding site ownership, responsibility, and liability.
Minimal constraints on publication of results (research data will be public domain, but the site owner will be given the opportunity to review the data prior to publication).

Well-characterized site with respect to source and contaminants and hydrogeologic setting. Well-characterized hydrogeology includes NAPL distribution, heterogeneity, hydraulic potential surface, and permeability of individual hydrologic units.

A well-defined, accessible source area that can be experimentally manipulated and where the nature and distribution of DNAPL contaminants are known.
Some remediation funding for the cleanup of their site from their agency which could be augmented by the FeDTIP.

Desirable but not mandatory criteria include the following:

Shallow groundwater table. However, if multiple monitoring wells are already situated within the plume area, this criterion is less important. Ideally, contamination is no greater that 50

feet. Consideration will be given to sites with deeper contamination depending on specific circumstances.

A confining layer no greater that 50 feet. This will depend on the total depth of contamination.

Space for installation of skid-mounted equipment.

Aquifer permeability ranging from 10^{-3}-10^{-7} cm/sec (for *in-situ* treatment technologies).

SECTION 2. APPLICATION REQUIREMENTS AND EVALUATION CRITERIA

General

Each site must submit an application to be considered for acceptance by the FeDTIP. The FeDTIP may select more than one applicant. Each site may choose to evaluate multiple technologies. The application should follow the "Outline of Evaluation Criteria" shown later in this section. The general descriptions of evaluation criteria in this outline are provided to assist the applicant in addressing the criteria; they do not represent comprehensive discussions of each element.

The number of pages presented in the proposal should not exceed twenty (20), including charts, tables, diagrams, and drawings. Font used shall be 12-pt. Times New Roman, and the typing shall be single-spaced with margins set at 1-inch all around. A summary of previously acquired data is particularly important as part of the application, and reports or papers covering the offered site may be appended to the proposal. References may also be attached as an appendix, but they will be counted toward the 20-page limit for application length. More detailed site characterization data and information may also be included in the application, and this information will not be counted within the 20-page limit. Do not include proprietary data or confidential business information in the application.

An original and ten (10) copies of the application are required. After review of all applications, FeDTIP may request a meeting with the site representative to discuss questions or concerns raised during the review process.

Review and Selection Process

Applications will be reviewed by a panel of Federal and non-Federal representatives from the FEDTIP. Applicants will be selected on the basis of their readiness and suitability for

hosting a field-scale demonstration, their applicability to DNAPL contamination problems, their amenability to innovative technology remediation, and their potential for providing information addressing problems common to a large number of DNAPL sites. Selection or rejection of a proposed site by FeDTIP will reflect a judgement based on the material presented in the application and the needs and resources of FeDTIP. All applicants will receive a written response outlining the results of the review. FeDTIP reserves the right to reject any and all applications based on technical review or insufficient FeDTIP funds.

Solicitation Schedule

This solicitation for host sites will be conducted according to the following schedule:

Solicitation issue date:	October 29, 2001
Solicitation due date:	January 11, 2002
Peer-review completed:	February 28, 2002
Compilation of review comments:	March 15, 2002
Responses to accepted applicants:	April 1, 2002

Outline of Evaluation Criteria

The following is an outline of the evaluation criteria that the application should follow.

I. Site Description
II. Site Characterization Factors
III. Regulatory Factors
IV. Logistical Factors

The following section discusses this outline in greater detail. Suggested page lengths for addressing each factor are also listed.

I. Site Description (1-2 pages)

1) Description of site/facility: site name, location, owner and operator.

2) Site history: previous use of the site and the method or means of site contamination. Drawings showing the locations of contamination and infrastructure, photos showing history of

contamination and infrastructure, and diagrams may be used as appropriate.

General Guidance: Application should have a good description of site history and facility. It should be well written, clear, with relevant diagrams. There should be neither large gaps in information nor contradictory information that would lead the reviewers to question the applicant's basic knowledge of the site.

II. Site Characterization Factors (5-10 pages)

For demonstration of source treatment technologies:

1) Contaminants present at the site including DNAPLs with emphasis on chlorinated solvents.

2) Levels of contamination present at the DNAPL source.

3) Contaminated medium or media including geologic strata, heterogeneity, hydraulic potential surface, distribution of contaminants at the site, and permeability of individual hydrologic units.

4) Current remediation, treatment, or monitoring efforts underway or planned.

5) Detailed site geology and hydrology.

6) Utilities for equipment and instrument operation.

General Guidance: Primary interest will be in sites that have DNAPL contamination problems with well-characterized source area. If there are other compounds present that will interact with chlorinated solvents or cause analytical interference, then this should be noted, and relative levels of the various compounds should be given. Vertical and horizontal extent of contamination should be known and well characterized. Location of contamination including depth below the surface and depth to the water table should be given. Information on the permeability of the site's geologic formations is highly desired.

III. Regulatory Factors (2-3 pages)

· Summary of Risk Assessment Findings.

· Cleanup or treatment goals.

· Summary of existing remedial action plans.

- Summary of state and/or federal regulatory agency's involvement with site.

- Schedule for proposed remedial action.

General Guidance. If a risk assessment has been performed, the results should indicate that site remediation is necessary. If cleanup goals have been set, then these should be presented and should be realistic.

It is desirable that the applicant has support of the appropriate regulatory agency in pursuing demonstration and implementation of innovative technologies. For example, a joint submission from both the site owner and the regulatory agency would be advantageous. If there is a remedial action schedule for the site, then the schedule should be flexible enough to allow time to organize a demonstration (approximately three months is needed initially to plan the demonstration and another 9 to 21 months for the actual completion of the demonstration).

IV. Logistical Factors (3-5 pages)

1) Site accessibility and Security.

2) Infrastructure Support (water, utilities, excavation services, test area, etc.).

3) Ecological Factors

General Guidance. The site must be accessible and be able to provide needed utilities for the demonstration. There should be space available to carry out the demonstration (space is needed for equipment, support area, skid-mounted equipment for *ex-situ* treatment technologies, etc.). It is desirable that the applicant be able to provide or otherwise leverage logistical support for the demonstration. Aside from utilities and accessibility, logistical support also includes items such as excavation, demolition, disposal, and assistance in technology vendor's expenses. If logistical problems are foreseen, then applicant should be committed to resolving these issues.

With respect to the actual technology demonstration following selection of the host site, it is important that a technology not have any adverse effect on the ecology, e.g., endangered species, wetlands, other protected areas present, etc. The presence of these ecological factors may necessitate use of innovative technologies for eventual cleanup. If this is the case, then the site may be of higher interest to the FeDTIP. In the solicitation response, the applicant should specify the presence of any special ecological concerns that might impact a decision to select the site.